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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,619

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EXAMINER

COHEN, JODI F

ART UNIT

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1741

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,619	Applicant(s) TAKADA ET AL.	
	Examiner Jodi Cohen	Art Unit 1741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-16 and 27-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-16 and 27-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/14/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-16 and 30-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 7, 10 and 14 recite the limitations, “(measured by a Brookfield rotary viscometer using spindle No.7, at 2 rpm, at 20° C) in low shear rate region (0.43 sec⁻¹) and the points C and D being at 20-2000 poise poises of an apparent viscosity (measured by an apparent viscosity meter according to JIS K2220, at 20 ° C) in high shear rate region (783 sec⁻¹)” It is unclear if the limitations within the parentheses are meant to further limit the claims. For the purpose of this examination these limitations are considered to be optional.

4. Claims 30 and 33 include the limitation “wherein the paste material is the one-pack-type curing paste material of claim 27” It is unclear if applicant is intending for method claims 30 and 33 to depend from product claim 27 or if applicant intends to include all of the particulars of claim 27 into claims 30 and 33. If applicant intends to include all of the particulars into claims 30 and 33 then applicant is advised to amend the claims to reflect this and avoid confusion.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-16, and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda JP 06 198152 (Note: specific column and line number references cited below are made with respect to Okuda et al. US 6,538,040 which is employed as a English language equivalent for the noted Okuda JP 06 198152 document) over Cobbs Jr. et al. (US 4,778,631) (referred to as '631 herein after) and further evidenced by Polymer Technology, as viewed at <http://polymer.w99of.com/tag/shear-stress/> on August 2, 2011 (referred to as Polymer Technology herein after).

Regarding claims 7, 10, 14 and 30-36, '040 discloses a method for producing an expandable material using a piston pump (45A or 45B) having a cylinder (451) and a piston (452) adapted to reciprocally move within the cylinder to effect a suction stroke and a discharge stroke. '040 further discloses the method for producing an expandable material comprising the steps of:

supplying a gas at a pressure higher than that of the high-viscosity material it is being supplied to, wherein pressure of the gas supplied to the cylinder under a predetermined pressure by affecting the suction stroke is 0.1-5 kg/cm² (Col 6; lines 47-50)

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discharging the foamed material from a dispersing pipe and;
operating the piston pump device via a control device (19) (Col3; line 34-Col 4;
line 68);

supplying a high-viscosity paste material to the cylinder to mix with the low-pressure gas and produce a gas-mixed material. '040 does not disclose the composition or properties of the high-viscosity paste material however; '040 specifically teaches using a hot-melt material such as the polymer described in JP 63-264327 also published as Cobbs Jr. et al. (US 4,778,631) (Col 1; lines 43-46).

'040 discloses a piston pump and specifically teaches using a hot-melt material such as that in '631 thus it would have been obvious to one of ordinary skill in the art to use the hot-melt adhesive of '631 in the method discussed above because '040 specifically cites the use of the hot-melt adhesive described in '631 in the piston pump '040.

It has been established that it would have been obvious to one of ordinary skill in the art to use the adhesive of '631 in the method of producing an expandable material as taught by '040, '631 discusses using a high viscosity hot melt thermoplastic material to produce an expandable paste and is considered a one-pack-type curing paste material for use as an adhesive, sealant, coating, or gasketing material after being mixed and foamed such as by the pump of '040 (Col 4; line 58-Col 5; line 47). '631 teaches the hot melt has high-viscosities range from 22 poises-350 poises, 500 poises to above 10,000 poises (Col 2; lines 22-27, Col 3; lines 11-20). '631 clearly discloses the hot-melt material containing viscosities within the ranges of those in applicant's

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claims, however '631 and '040 are silent about the shear rate at these viscosities. '631 states that "high viscosities on the order of 50,000 to above 1,000,000 cps can be achieved with commercially acceptable throughput rates and with minimal and acceptable temperature rise of the polymeric material into and through a low energy input mixer..." (Col 3; lines 13-23). Thus the effect of shear rate on viscosity at given temperatures is a known relationship for polymers, this is further evidenced by Polymer Technology, and thus it would have been obvious to one of ordinary skill in the art through routine experimentation to alter the shear rate in order to achieve the desired high viscosities '040 specifies are necessary to operate with the piston pump and thus obtain a desired product.

Courts have held that when a variable, i.e. shear rate, has been established as a result-effective-variable or a variable that achieves a specific result, i.e. viscosity, it would have been obvious to one of ordinary skill in the art to optimize said variable, shear rate, through routine experimentation in order to obtain a desired result, or specific viscosity (See MPEP 2144.05). One of ordinary skill in the art, given the piston pump of '404 which specifies the use of the hot melt material of '631 would know the effect of shear rate on the viscosity of the hot melt '631 and thus optimize the shear rate the hot-melt experiences within the pump to obtain a desired high viscosity as taught by '404 and '631.

Regarding claims 8-9 and 11-13, in further view of the discussion above, the method and apparatus of '404 is specifically for discharging a foamed hot-melt type

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adhesive product from the dispersing pipe by the use of curable polymers such as those described in '631 (Col 1; lines 43-46 of '404 and Col 6; lines 5-53 of '631).

Regarding claims 15-16, '631 discloses a thermosetting material that can be cured by heat, a catalyst or other chemical means. A person of ordinary skill in the art would appreciate this to include vulcanization-crosslinking and photo/radiation-curable material, especially wherein '631 goes on to include examples of thermosetting, thermoplastic materials to include polyethylene, polypropylene, polybutylenes, polystyrenes, polyvinyl chloride, polyolefin, polyester, epoxy polymers, acrylic resins and specifically room temperature vulcanizing rubbers (Col 6; lines 20-52).

7. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cobbs Jr. et al. (US 4,778,631) (referred to as '631 herein after) and further evidenced by Polymer Technology, as viewed at <http://polymer.w99of.com/tag/shear-stress/> on August 2, 2011 (referred to as Polymer Technology herein after) and further in view of "What is viscosity and Brookfield Viscometers, Rheometer, Brookfield Engineering, as viewed at <http://www.brookfieldengineering.com/education/what-is-viscosity.asp> on 2/15/2011 hereinafter referred to as Brookfield.

Regarding claims 27-29, '631 discusses using a high viscosity hot melt thermoplastic material to produce an expandable paste and is considered a one-pack-type curing paste material for use as an adhesive, sealant, coating, or gasketing material after being mixed and foamed such as by the pump of '040 (Col 4; line 58-Col 5; line 47). Prior art '631 teaches a paste material including thermosetting,

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thermoplastic and curable materials including various polyisocyanate compounds polyethylene, polypropylene, polybutylenes, polystyrenes, polyvinyl chloride, polyolefin, polyester, epoxy polymers, acrylic resins and specifically room temperature vulcanizing rubbers (Col 6; lines 7-52).

'631 teaches the hot melt has high-viscosities range from 22 poises-350 poises, 500 poises to *above* 10,000 poises as measure by a Brookfield viscometer (Col 2; lines 22-27, Col 3; lines 11-20). '631 clearly discloses the hot-melt material containing viscosities within the ranges of those in applicant's claims, however '631 is silent about the shear rate at these viscosities. '631 is also silent as to the settings at which the apparent viscosity was measured by the Brookfield viscometer. The settings of the instruments used to measure the product are not considered to further limit the product itself however; it is recognized that given different settings the measured "apparent viscosity" of claim 27 would differ as noted on page 4 of Brookfield.

'631 states that "high viscosities on the order of 50,000 to above 1,000,000 cps can be achieved with commercially acceptable throughput rates and with minimal and acceptable temperature rise of the polymeric material into and through a low energy input mixer..." (Col 3; lines 13-23). The effect of shear rate on viscosity at given temperatures is a known relationship for polymers, this is further evidenced by Polymer Technology, and thus it would have been obvious to one of ordinary skill in the art through routine experimentation to alter the shear rate in order to achieve the desired high viscosities '040 specifies are necessary to operate with the piston pump and thus obtain a desired product.

Courts have held that when a variable, i.e. shear rate, has been established as a result-effective-variable or a variable that achieves a specific result, i.e. viscosity, it would have been obvious to one of ordinary skill in the art to optimize said variable, shear rate, through routine experimentation in order to obtain a desired result, or specific viscosity (See MPEP 2144.05). One of ordinary skill in the art, given the piston pump of '404 which specifies the use of the hot melt material of '631 would know the effect of shear rate on the viscosity of the hot melt '631 and thus optimize the shear rate the hot-melt experiences within the pump to obtain a desired high viscosity as taught by '404 and '631.

Additionally, Brookfield and Polymer technology discuss how the viscosity of non-Newtonian fluids is varied with shear. Brookfield also teaches how experimental parameters of the Viscometer model, i.e. spindle and speed all have an effect on the measured viscosity, or apparent viscosity. Brookfield also teaches that the apparent viscosity is only accurate when explicit experimental parameters are furnished and adhered to (pages 4-5).

It is noted that the zone of apparent viscosities and shear as required by present claim 27 covers an extremely large amount of shear rates and apparent viscosity combinations. Given that Prior art '631 teaches the same compounds as required by present claims 28-29 it would be obvious to one of ordinary skill in the art to expect these compounds to have the same viscosity as the present invention given the same experimental parameters as indicated by Brookfield.

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8. Claims 27-29 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (WO 95/00528) as cited in the English equivalent (US 5866668) and in further view of the applicant's admitted prior art as evidenced by Polymer Technology, as viewed at <http://polymer.w99of.com/tag/shear-stress/> on August 2, 2011 (referred to as Polymer Technology herein after) and "What is viscosity and Brookfield Viscometers, Rheometer, Brookfield Engineering, as viewed at <http://www.brookfieldengineering.com/education/what-is-viscosity.asp> on 2/15/2011 (referred to as Brookfield hereinafter).

Regarding claims 27-29, Maeda teaches a one-pack-type heat curable composition to be used as an adhesive, sealant or coating material and thus considered a paste (Col 1; lines 1-10). Maeda teaches the paste is heat curable, comprising a polyurethane (Col 2; lines 20-35),

Maeda teaches the polymer having a viscosity of 5000 to 500000 cps at 20 degrees Celsius however; does not teach the settings at which the apparent viscosity was measured. The settings of the instruments used to measure the product are not considered to further limit the product itself however; it is recognized that given different settings the measured "apparent viscosity" of claim 27 would differ as noted on page 4 of Brookfield.

Brookfield and Polymer technology both discuss how the viscosity of non-Newtonian fluids is varied with shear. Brookfield also teaches how experimental parameters of the Viscometer model, i.e. spindle and speed all have an effect on the measured viscosity, or apparent viscosity. Brookfield also teaches that the apparent

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viscosity is only accurate when explicit experimental parameters are furnished and adhered to (pages 4-5).

Applicant's point to Maeda as a method for creating the one-pack type curing polyurethane material of the present invention on page 9 of the present specification thus one of ordinary skill in the art would expect the curable polyurethane material taught by Maeda to exhibit the same properties as the present invention when given the same experimental parameters.

Response to Arguments

9. Applicant's arguments filed 12/09/2010 have been fully considered but they are not persuasive.

35 U.S.C. 112 rejections

Applicant argues the rejections of claims 7-16 under 35 U.S.C. 112 second paragraph for failing to point out and distinctly claim the subject matter which applicant regards as the invention. Applicant argues that all words in a claim must be considered and that the PTO cannot interpret the claim in a manner that conflicts with the specification. In response to this argument the Examiner maintains that it was unclear whether or not Applicant intends for the information in parentheses to be interpreted as claim limitations and thus every word *clearly defined* in the claims was considered. The claims were not interpreted in a manner that conflicted with the specification. Claims are not required and often do not contain all of the particulars of the specification. The

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claims were given the broadest interpretation in light of the specification. The rejections of claims 7-16 under 35 U.S.C. 112 second paragraph are maintained.

35 U.S.C. 103(a) rejections

Applicant argues that the prior art '404 and '631 teach away from one another. This argument is not persuasive primarily because prior art '040 specifically teaches using a hot-melt material such as described in JP 63-264327 also published as Cobbs Jr. et al. (US 4,778,631) (Col 1; lines 43-46). One reference actually discloses using the teachings of the other for this reason alone the references do not teach away from one another.

Applicant also argues that prior art '631 specifically teaches away because one of ordinary skill in the art would be led in a direction divergent from the path taken by the applicant. In summary, '040 teaches the same piston pump and method of using as the present invention. Reference '040 also teaches using the hot-melt as taught by reference '631 thus one of ordinary skill in the art would not be led away from the present invention. Furthermore, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed see MPEP 2143.01.

Applicant further argues that the reliance on the prior art referred to as Polymer Technology is misplaced because if the prior art fails to disclose a rationale for varying

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parameters to be result effective it cannot have been obvious to choose the claimed parameter. In response to this argument, applicant fails to acknowledge that prior art '631 states it is desirable to achieve the specific viscosities; "high viscosities on the order of 50,000 to above 1,000,000 cps can be achieved with commercially acceptable throughput rates and with minimal and acceptable temperature rise of the polymeric material into and through a low energy input mixer..." (Col 3; lines 13-23). Therefore reference '631 teaches optimizing the viscosity, given the relationship between viscosity and shear rate taught by Polymer Technology it would have been obvious to one of ordinary skill in the art to optimize the shear rate in order to achieve the desired viscosity.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jodi Cohen whose telephone number is 571-270-3966. The examiner can normally be reached on Monday-Friday 7:00am-5:00pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Daniels can be reached on 571-272-2450. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jodi F. Cohen/
Examiner, Art Unit 1741

/Matthew J. Daniels/
Supervisory Patent Examiner, Art Unit 1741